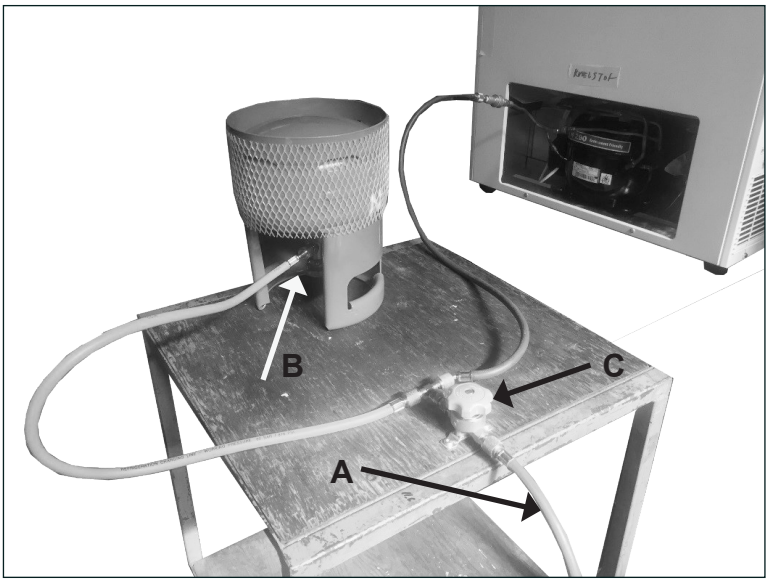
Service Manual
Ultra Low Temperature Freezers
ULT C75 / C200 / C300 / C400

Contents

Electrical diagram
The electrical diagram is located in the spare parts list.
Please order the spare parts list for your product.

Charging from a service bottle:



1. Connect service bottle, compressor and vacuum pump **(A)** to a T
2. Open valve **(C)** and let vacuum pump run for minimum 30 min
3. Close valve **(C)**
4. Place the bottle on a scale if possible.
5. Open valve **(B)** slowly
6. When the refrigerant stops flowing into the system, start the compressor.
7. Let the compressor run for 5 min
8. Check amount of refrigerant charged on the scale, should be approx. the same as on the rating plate
9. Repeat from 5 if necessary

Controller

User Interface

Interface

Keys and combinations

SET	To display target set point. In programming mode it selects a parameter or confirm an operation.
❄	NOT USED
▲	(UP) To see the max stored temperature. In programming mode it browses parameters or increases the displayed value.
▼	(DOWN) To see the min stored temperature. In programming mode it browses the parameters or decreases the displayed value.
⏻	NOT USED
☼	NOT USED
▲ + ▼	To lock and unlock the keyboard
SET + ▼	To enter in programming mode
SET + ▲	To return to the room temperature display.

LEDs function

LED	MODE	FUNCTION
	ON	Compressor enabled
	Flashing	Anti-short cycle delay enabled
	ON	An alarm is occurring
	ON	Continuous cycle is running
°C/°F	ON	Measurement unit
	Flashing	Programming phase

Main functions

How to see the set point

1. Push and immediately release the **SET** button. The display will show the set point value.
2. Push and immediately release the **SET** button or wait for 5 seconds to display the probe value again.

How to change the set point

1. Keep **SET** button pressed more than 2 seconds to change the set point value.
2. The value of the set point will be displayed and the **"°C"** LED icon will start blinking.
3. To change the set point value push the **UP** or **DOWN** buttons.
4. To memorize the new set point value push the **SET** button again or wait for 10 sec.

How to lock the keyboard

1. Push the **UP** or **DOWN** buttons for more than 3 sec.
2. The display will show **"PoF"**
3. Now it is only possible to see the set point and the min and max temperatures.

How to unlock the keyboard

1. Push the **UP** or **DOWN** buttons for more than 3 sec.
2. The display will show **"Pon"**

Mute the audible alarm

1. When an alarm occur push any key to mute the alarm.
2. After 30 min. the alarm will go off again, if it is still active.
   Note: The visible alarm will be on the display as long as the alarm is active. This alarm cannot be removed.

Min and max temperatures

How to see the min temperature
1. Press and release the **DOWN** button.
2. The **"Lo"** message will be displayed followed by the minimum temperature recorded.
3. By pressing the **DOWN** button again or by waiting for 5 sec the normal display will be restored.

How to see the max temperature
1. Press and release the **UP** button.
2. The **"Hi"** message will be displayed, followed by the maximum recorded temperature.
3. By pressing the **UP** button again or by waiting for 5 sec, the normal display will be restored.

How to reset the temperature recorded
1. Keep **SET** button pressed more than 3 ses while the max or min temperature is displayed.
2. **"rSt"** message will be displayed.
3. The normal temperature will be displayed.

Parameters (see page 7-8)

How to change a parameter
1. Enter the programming mode by pushing **SET + DOWN** for 3 sec. The **"°C"** LED icon will start blinking.
2. Release the buttons and then push again **SET + DOWN** for more than 7 sec. The Pr2 will be shown on the display, followed from the **HY** parameter.
3. Now it is possible to browse the menu.
4. Select the required parameter.
5. Press **SET** to display its value
6. Use **UP** or **DOWN** to change its value.
7. Press **SET** to store the new value and move to the following parameter.

To exit: Press **SET + UP** or wait for 15 sec without pressing any key.

Alarm signal

MESSAGE	CAUSE
”P1”	Room probe failure
”HA”	Maximum temperature alarm
”LA”	Minimum temperature alarm

List of parameters:
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Label	Name	Key Range	E1 -80
Set	Set point	LS÷US	-82
Hy	Differential	0,1÷25.5°C	1
LS	Minimum set point	[-100,0°C ÷ SET]	-95
US	Maximum set point	SET ÷ 150,0°C]	-60
Ot	Thermostat probe calibration	-12÷12°C	0
OdS	Outputs delay at start up	0÷255 min	0
AC	Anti-short cycle delay	0 ÷ 50 min	5
CCt	Continuos cycle duration	0.0÷24.0h	0
CCS	Set point for continuous cycle	-100÷150,0°C	-82
COn	Compressor ON time with faulty probe	0 ÷ 255 min	60
COF	Compressor OFF time with faulty probe	0 ÷ 255 min	5
CH	Kind of action	CL=cooling; Ht= heating	cl
CF	Temperature measurement unit	°C °F	°C
rES	Resolution	in=integer; dE= dec.point	in
dLy	Display temperature delay	0 ÷ 20.0 min (10 sec.)	0
IdF	Interval between defrost cycles	1 ÷ 120 ore	0
MdF	(Maximum) length for defrost	0 ÷ 255 min	0
dFd	Displaying during defrost	rt, it, SEt, DEF	rt
dAd	MAX display delay after defrost	0 ÷ 255 min	0
ALc	Temperat. alarms configuration	rE= related to set;Ab = absolute	rE
ALU	MAXIMUM temperature alarm	Set÷110.0°C	15
ALL	Minimum temperature alarm	-100°C÷Set/	50
AFH	Differential for temperat. Alarm recovery	(0,1°C÷25,5°C)	1
ALd	Temperature alarm delay	0 ÷ 255 min	0
dAo	Delay of temperature alarm at start up	0 ÷ 23h e 50	4
tbA	Alarm relay silencing	n=no; y=yes	y
Aro	Alarm relay activation with power failure	n(0) - Y(1)	y
ALF	Alarm relay activation for all the alarms	n(0) - Y(1)	y
bon	Time of buzzer restart after muting, in case of alarm duration	0 ÷ 30 (min.)	30
AoP	Alarm relay polarity (oA1=ALr)	oP; cL	cl
i1P	Digital input polarity	oP=opening;CL=closing	cl
i1F	Digital input configuration	EAL, bAL, PAL, dor; dEF;Htr, AUS	AUS
did	Digital input alarm delay	0 ÷ 255 min	15
nPS	Number of activation of pressure switch	0 ÷15	15
odc	Compress status when open door	no; Fan; CPr; F_C	no
rrd	Regulation restart with door open alarm	n – Y	y
HES	Differential for Energy Saving	(-30°C÷30°C)	1
Adr	Serial address	0÷247	1
PbC	Kind of probe	Pt1000; Ptc	Pt1
onF	on/off key enabling	nu, oFF; ES	oFF
rSE	Real set point value	actual set	-
rEL	Software release	-	-
Ptb	Map code	-	-